

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION VII  
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KANSAS CITY, KANSAS 66101

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Subject: Statement of work for conducting an RI/FS for the  
Jasper County, Missouri Superfund Site

FROM: Mark Bogina, Project Manager  
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TO: MK - Environmental

Purpose:

The purpose of this Remedial Investigation/Feasibility Study (RI/FS) is to investigate the nature and extent of contamination at the proposed Jasper County, Missouri Superfund Site and to develop and evaluate remedial alternatives, as appropriate. The contractor will furnish all necessary personnel, materials, and services needed for, or incidental to, performing the RI/FS, except as otherwise specified herein. The contractor will conduct the RI/FS in accordance with the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, October 1988).

This statement of work (SOW) has been developed for the Jasper County, Missouri site which comprises the Missouri portion of the Tri-State Mining District. Previous work has been completed on the Cherokee County, Kansas and Ottawa County, Oklahoma portions of the Tri-State District. Two RI/FS's have been completed for the Galena subsite and further investigations are scheduled for the Baxter Springs and Treece subsites in Cherokee County, Kansas.

The Jasper County site contains many abandoned underground mine workings and much of the land surface is covered with mining and milling wastes. The site has been proposed for inclusion to the NPL and is presently awaiting approval for final listing. Releases of contaminant metals to ground and surface waters are occurring at the site. The primary sources of contamination are the residual metal sulfides in the abandoned mine workings and tailing piles. Upon exposure to the atmosphere, these metal sulfides become oxidized and mobilize as dissolved compounds which increases acidity. The resulting metal-laden acidic water, referred to as acid mine drainage, contaminates ground water, fills mine shafts and subsidences, and when surfacing through springs combines with metal-laden surface water runoff resulting in contaminated ground water, as well as rivers, creeks, and lakes.

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## Scope

The specific activities to be conducted at the Jasper County site are segregated into 13 separate tasks.

- \* TASK 1 - Project Planning
- \* TASK 2 - Community Relations
- \* TASK 3 - Field Investigations
- \* TASK 4 - Sample Analysis/Validation
- \* TASK 5 - Data Evaluation
- \* TASK 6 - Risk Assessment
- \* TASK 7 - Treatability Studies
- \* TASK 8 - RI Report(s)
- \* TASK 9 - Remedial Alternatives Development and Screening
- \* TASK 10 - Detailed Analysis of Alternatives
- \* TASK 11 - FS Report(s)
- \* TASK 12 - Provide Technical Support In Preparation For Negotiations with the Potentially Responsible Parties (PRPs)
- \* Task 13 - Contract Close-Out Activities

The contractor will specify a schedule of activities and deliverables, a budget estimate, and staffing requirements for each of the tasks which are described below.

### TASK 1 Project Planning

Upon receipt of this SOW from the U.S. EPA outlining the general scope of the project, the contractor shall begin planning the specific RI/FS activities that will need to be conducted. As part of this planning effort, the contractor will compile existing information (e.g., topographic maps, aerial photographs, data collected as part of the NPL listing process) and conduct a site visit to become familiar with site topography, access routes, and the proximity of potential receptors to site contaminants. Based on this information, the contractor will prepare a site back-ground summary that should include the following:

- \* Local Regional Summary - A summary of the location of the site, pertinent area boundary features and general site physiography, hydrology, geology, and the location of all drinking water supply wells and depth of their screened intervals.

- \* **Nature and Extent of Problem** - A summary of the actual and potential onsite health and environmental effects posed by any contamination present. Emphasis should be on expanding the conceptual understanding of the source(s) of contamination, potential release mechanisms, potential routes of migration, and potential human and environmental receptors.
- \* **History of Regulatory and Response Actions** - A summary of any previous response actions conducted by local, State, Federal, or private parties.

The contractor will meet with EPA to discuss the following:

- \* The proposed scope of the project and the specific investigative and analytical activities that will be required.
- \* Potential remedial technologies and the need for or usefulness of treatability studies.
- \* Potential ARARs associated with the location and contaminants of the site and the potential response actions being contemplated.

Once the scope has been agreed upon with EPA, the contractor will (1) develop the specific project plans to meet the objectives of the RI/FS and (2) initiate subcontractor procurement and coordination with analytical laboratories. The project plans will include: a work plan which provides a project description and outlines the overall technical approach, complete with corresponding personnel requirements, activity schedules, deliverable due dates, and budget estimates for each of the specified tasks; a sampling and analysis plan (composed of the field sampling plan (FSP) and the quality assurance project plan (QAPP)); a health and safety plan; and a community relations plan.

**Sampling and Analysis Plan** - The contractor will prepare an SAP which will consist of the following:

**Field Sampling Plan.** The FSP should specify and outline all necessary activities to obtain additional site data. It should contain an evaluation explaining what additional data are required to adequately characterize the site, conduct a baseline risk assessment, and support the evaluation of remedial technologies in the FS. The FSP should clearly state sampling objectives; necessary equipment; sample types, locations, and frequency; analysis of interest; and a schedule stating when events will take place and when deliverables will be submitted.

**Quality Assurance Project Plan.** The QAPP should be project specific and rely on the ARCS QAPP as much as possible. The following items should be included:

- \* A project description
- \* A project organization chart illustrating the lines of responsibility of the personnel involved in the sampling phase of the project
- \* Quality assurance objectives for data such as the precision and accuracy, completeness of data, representativeness of data, comparability of data, and the intended use of the collected data
- \* Sample custody procedures during sample collection, in the laboratory, and as part of the final evidence files
- \* The type and frequency of calibration procedures for field and laboratory instruments, internal quality control checks, and quality assurance performance audits
- \* Data documentation and tracking procedures

Standard operating procedures for QA/QC that have been established within EPA will be referenced and not duplicated in the QAPP.

Health And Safety Plan - The contractor will develop an HSP on the basis of site conditions to protect personnel involved in site activities and the surrounding community. The plan should address all applicable regulatory requirements contained in 20 CFR 1910.120(i)(2) - Occupational Health and Safety Administration, Hazardous Waste Operations and Emergency Response, Interim Rule, December 19, 1986; U.S. EPA Order 1440.2 - Health and Safety Requirements for Employees Engaged in Field Activities; U.S. EPA Order 1440.3 - Respiratory Protection; U.S. EPA Occupational Health and Safety Manual; and U.S. EPA Interim Standard Operating Procedures (September, 1982). The plan should provide a site background discussion and describe personnel responsibilities, protective equipment, health and safety procedures and protocols, decontamination procedures, personnel training, and type and extent of medical surveillance. The plan should identify problems or hazards that may be encountered and how these are to be addressed. The HSP developed by CH2M Hill for work done in Cherokee County, Kansas may be revised and implemented for this site. Procedures for protecting third parties, such as visitors or the surrounding community, should also be provided.

Community Relations Plan - The contractor will prepare a community relations plan on how citizens want to be involved in the process based on interviews with community representatives and leaders. The CRP will describe the types of information to be provided to the public, outline the opportunities for community comment and input during the RI/FS, and identify issues of concern to the public. Deliverables, schedule, staffing, and budget requirements should be included in the plan.

The work plan and corresponding activity plans will be submitted to EPA as specified in the contract or as discussed in the initial meeting(s).

## TASK 2 Community Relations

The contractor will provide the personnel, services, materials, and equipment to assist EPA in undertaking a community relations program. This program will be integrated with all remedial response activities to ensure community understanding of actions being taken and to obtain community input on RI/FS progress. Community relations support provided by the contractor will include, but may not be limited to, the following:

- \* Preparation of news releases, fact sheets, slide shows, exhibits, and other audio-visual materials designed to apprise the community of current or proposed activities
- \* Arrangements of briefings, press conferences, workshops, and public and other informal meetings
- \* Conductance of on-site interviews of local officials and general public to identify issues of concern
- \* Preparation of reports and participation in public meetings, project review meetings, and other meetings as necessary for the normal progress of the work

Deliverables and the schedule for submittal will be identified in the community relations plan discussed under Task 1.

## TASK 3 Field Investigations

The contractor will conduct those investigations necessary to characterize the site and evaluate the actual or potential risk to human health and the environment posed by the site. Investigative activities will focus on problem definition and result in data of adequate technical content to evaluate potential risks and to support the development and evaluation of remedial alternatives during the FS. The aerial extent of investigation will be finalized during the RI.

Surface mine wastes will be identified and mapped for each mining district. Volume estimates will be made based on field notes describing estimated heights and side slopes of the piles coupled with data from ariel photographs. Areas containing significant volumes of mining wastes will be screened for preliminary metals context characterization, using a field X-ray fluorescence (XRF) instrument. The XRF analyses will document the relative quantity of the different metals within the waste types. Emphasis will be directed at quantifying lead, cadmium, and zinc, that can pose risks to human health and the environment.

Site investigation activities will follow the plans developed in Task 1. Strict chain-of-custody procedures will be followed and all sample locations will be identified on a site map. The contractor will provide management and QC review of all activities conducted under this task. Activities anticipated for the site are as follows:

- \* Mapping of the Site - A Bureau of Mines map of mine features in Jasper County should be revised to reflect existing site conditions. Aerial photographs should be used along with information gathered during the preliminary site visit to identify mine shafts, pits, and subsidences as well as surface mine tailing piles.
- \* Waste Characterization - Determine the location, type, and quantities as well as the physical and chemical characteristics of all significant mine waste piles remaining on the site.
- \* Hydrogeologic Investigation - Determine the presence and potential extent of ground water contamination. This will be facilitated by the sampling of, at minimum, 25% of all privately owned water wells within the site. Results of the sampling program should estimate the horizontal and vertical distribution of contaminants, the contaminants' mobility, and predict the long-term disposition of the contaminants.
- \* Soils and Sediments Investigation - Determine the vertical and horizontal extent of contamination of surface and subsurface soils and sediments. Information on local background levels, degree of hazard, location of samples, techniques used, and methods of analysis should be included.
- \* Surface Water Investigation - Estimate the extent and fate of contamination in local surface waters. This effort should include an evaluation of possible future discharges.
- \* Air Investigation - Investigate the extent of atmospheric contamination from metal dust contaminants found at the site. This effort should assess the potential of the contaminants to enter the atmosphere, local wind patterns, and the anticipated fate of airborne contaminants.

Information from this task will be summarized and included in the RI/FS report appendixes.

#### TASK 4 Sampling Analysis/Validation

The contractor will develop a data management system including field logs, sample management and tracking procedures, and document control and inventory procedures for both laboratory data and field methods to ensure that the data collected during the investigation are of adequate quality and quantity to support the risk assessment and the FS.

## TASK 5 Data Evaluation

The contractor will analyze all site investigation data and present the results of the analyses in an organized and logical manner so that the relationships between site investigation results for each medium are apparent. The contractor will prepare a summary that describes (1) the quantities and concentrations of metal contaminants at the site and the ambient levels surrounding the site; (2) the number, locations, and types of nearby populations and activities; and (3) the potential transport mechanism and the expected fate of the contaminant in the environment.

## TASK 6 Risk Assessment

The contractor shall conduct a baseline risk assessment to assess the potential human health and environmental risks posed by the site in the absence of any remedial action. This effort will involve four components:

- \* Contaminant Identification - The contractor will review available information on the types of metal contaminants present at the site and identify the major contaminants of concern. Investigations conducted in Cherokee County, Kansas have identified cadmium, lead, and zinc as major contaminants of concern.
- \* Exposure Assessment - The contractor will identify actual or potential exposure pathways, characterize potentially exposed populations, and evaluate the actual or potential extent of exposure.
- \* Toxicity Assessment - The contractor will provide a toxicity assessment of those contaminants found to be of concern during site investigation activities. This will involve an assessment of the types of adverse health or environmental effects associated with exposure, the relationships between magnitude of exposures and adverse effects, and the related uncertainties of contaminant toxicity. Much of this assessment may be drawn from previous work completed in Cherokee County, Kansas.
- \* Risk Characterization - The contractor will integrate information developed during the exposure and toxicity assessments to characterize the current or potential risk to human health and the environment posed by the site.

The risk assessment will be submitted to EPA as part of the RI report.

## TASK 7 Treatability Studies

The contractor will review the results of all bench and/or pilot studies which have been completed to date for the Cherokee County, Kansas subsites to determine the suitability of remedial technologies

to site conditions and problems. New technologies that may be suitable to the site should be identified as early as possible to determine whether there is a need to conduct additional treatability studies to better estimate costs and performance capabilities. Should additional treatability studies be determined to be necessary, a testing plan identifying the types and goals of the studies, the level of effort needed, a schedule for completion, and the data management guidelines should be submitted to EPA for review and approval.

Upon EPA approval, a test facility and necessary equipment, vendors, and analytical services will be procured by the contractor.

Upon completion of testing, the contractor will evaluate the results to assess the technologies with respect to the goals identified in the test plan. A report summarizing the testing program and its results should be prepared by the contractor and presented in the final RI/FS report. The contractor will implement all management and QC review activities for this task.

#### TASK 8 RI Report

Regular briefings should be held with the EPA Remedial Project Manager on a weekly basis. These briefings should be at minimum by telephone should provide an update of recent efforts, hours expended, etc.

Monthly reports will be prepared by the contractor to describe the technical and financial progress at the Jasper County site. Each month the following items will be reported:

- \* Status of work and the progress to date
- \* Percentage of the work completed and the status of the schedule
- \* Difficulties encountered and corrective actions to be taken
- \* The activity(ies) in progress
- \* Activities planned for the next reporting period
- \* Any changes in key personnel
- \* Actual expenditures (including fee) and direct labor hours for the reporting period and for the cumulative term of the project
- \* Projection of expenditures needed to complete the project and an explanation of significant departures from the original budget estimate

Monthly reports will be submitted to the EPA primary contact as specified in the contract. In addition, the activities conducted



and the conclusions drawn during the remedial investigation (Tasks 3 through 7) will be documented in an RI report (supporting data and information should be included in the appendixes of the report). The contractor will prepare and submit a draft RI report to EPA for review. Once comments on the draft RI report are received, the contractor will prepare a final RI report reflecting these comments.

#### TASK 9 Remedial Alternatives Development and Screening

Based upon previous work and results from subsequent RI's the contractor with guidance provided by EPA, will develop a range of distinct, hazardous waste management alternatives that will remediate or control any contaminated media (soil, surface water, ground water, sediments) remaining at the site, as deemed necessary in the RI, to provide adequate protection to human health and the environment. The potential alternatives should encompass, as appropriate, a range of alternatives in which treatment is used to reduce the toxicity, mobility, or volume of wastes but vary in the degree to which long-term management of residuals is required, one or more alternatives involving containment with little or no treatment, and a no-action alternative. Alternatives that involve minimal efforts to reduce potential exposures (i.e., site fencing, deed restrictions) should be presented as "limited action" alternatives.

The following steps will be conducted to determine the appropriate range of alternatives for this site:

- \* Establish Remedial Action Objectives and General Response Actions - Based on existing information, site-specific remedial action objectives to protect human health and the environment should be developed. The objectives should specify the contaminants, media of concern, exposure routes, receptors, and an acceptable contaminant level for each exposure route.

Preliminary remediation goals should be established based on readily available information (RFDs) or chemical-specific ARARs (MCLs). The contractor should meet with EPA to discuss the remedial action objectives for the site. As more information is collected during the RI, the contractor, in consultation with EPA, will refine remedial action objectives as appropriate.

General response actions will be developed for each medium of interest defining contaminant, treatment, excavation, or other actions to satisfy remedial action objectives. Volumes of mining waste piles and void space of remaining shafts, pits, and subsidences will be estimated.

- \* Identify and Screen Technologies - Based on the developed general response actions, hazardous waste treatment technologies should be identified and screened to ensure that only those

technologies applicable to the contaminants present, their physical matrix, and other site characteristics will be considered. This screening will be based primarily on a technology's ability to effectively address the contaminants at the site, but will also take into account a technology's implementability and cost. The contractor will select representative process options, as appropriate, to carry forward into alternative development. The contractor will identify the need for treatability testing for those technologies that are probable candidates for consideration during the detailed analysis.

- \* **Configure and Screen Alternatives** - The potential technologies and process options will be combined into media-specific or sitewide alternatives. The alternatives should be screened with respect to their effectiveness, implementability, and cost. The contractor will meet with EPA to discuss which alternatives will be evaluated in the detailed analysis and to facilitate the identification of action-specific ARARs.

#### TASK 10 Detailed Analysis of Alternatives

The contractor will conduct a detailed analysis of alternatives which will consist of an individual analysis of each alternative against a set of evaluation criteria and a comparative analysis of all options against the evaluation criteria.

The evaluation criteria are as follows:

- \* Overall Protection of Human Health and the Environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- \* Compliance with ARARs addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.
- \* Long-Term Effectiveness and Permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.
- \* Reduction of Toxicity, Mobility, or Volume Through Treatment is the anticipated performance of the treatment technologies a remedy may employ.
- \* Short-Term Effectiveness addresses the the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- \* Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
- \* Cost includes estimated capital and operation and maintenance costs, and net present worth costs.
- \* State Acceptance addresses the technical or administrative issues and concerns the support agency may have regarding each alternative.
- \* Community Acceptance addresses the issues and concerns the public may have to each of the alternatives.

The individual analysis should include : (1) a technical description of each alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative; and (2) a discussion that profiles the performance of that alternative with respect to each of the evaluation criteria. Once the individual analysis is complete, the alternatives will be compared and contrasted to one another with respect to each of the evaluation criteria.

#### TASK 11 FS Reports

The contractor will present the results of Tasks 9 and 10 in an FS report. Support data, information, and calculations will be included in appendixes to the report. The contractor will prepare and submit a draft FS report to EPA for review. Once comments on the draft FS have been received, the contractor will prepare a final FS report reflecting the comments. Copies of the final report will be made and distributed to those individuals identified by EPA.

#### TASK 12 Technical Support During PRP Negotiations

The contractor will provide technical assistance to the Remedial Program Manager (RPM) and Regional Counsel in preparation for negotiations, including but not limited to, review of work plans and other technical documents submitted by the Potentially Responsible Parties (PRPs). If the PRPs agree to conduct the RI/FS, the contractor shall provide additional enforcement and/or technical support to the RPM during the time period between issuance of the Administrative Order and the commencement of PRP activities on-site. Subsequently, the contractor shall provide oversight of the RI/FS performed by the PRPs.

#### TASK 13 Contract Close-out Activities

The contractor will include an estimate for administrative costs associated with contract close-out activities in the proposed workplan.